1.3 Define Master Data Conversions

Table of Contents

Overview

The purpose of this document is to identify all data conversion requirements and to develop a conceptual design and plan. Certain data from the existing legacy systems will need to be converted into the SAP ECC system and both manual and electronic conversions were identified in the Blueprint working sessions. The SCEIS team members and SAP consultants reviewed the conversion requirements, which justify the data conversion requirements from a business perspective. The Blueprint session helped identify the Workflow, Reports, Interface, Conversions, Enhancements, and Forms (WRICEF) for the project. This document will address the conversion portion of the WRICEF.

SAP provides several tools to import legacy data into the SAP ECC system. The tools provided by SAP are listed below:

- Manual data entry screens – SAP provides data entry screen for conversions that can be accessed through the implementation guild and standard menu paths. Examples of these screens are listed:
    - Asset Master
    - Asset Balances
    - Master data screen for general ledger, cost centers, and fund centers
- Import of data from Excel Worksheets – The SAP system has programs that will import data from EXCEL spreadsheets. Example of this process would include plan and budget data for the controlling module.
- Legacy System Migration Workbench (LSMW) – LSMW is a tool provided by SAP to map external data structures into SAP formats. Examples of conversion data that can be processed through the LSWM tool include the material master, asset master, and general ledger balances.
- Business Application process interface (BAPI) - The program language used by SAP system is ABAP. ABAP programs can include BAPI's to format legacy data and import data.

The Blueprint sessions used the following steps to begin the identification of the conversions. During the Realization phase of the project, the following steps will be reviewed and additional data will be gathered to finalize and execute the plans and conversion.

Conversion Plan Steps

The conversion steps will be planned using the design specification document (DSD). The DSD completion process will assist SCEIS with a better understanding of the following cutover steps.

- Review the Blueprint document to determine the business process and required converted data.
- Outline the conceptual design of conversion procedure.
- Identify the migration steps of the conversion process.

Design specification documents will be created from the WRICEF documents. Each high-level specification document will outline all the steps necessary and parameters of each conversion. The specifications will cover the following key areas:

- Legacy Data sources
- SAP data destinations
- Data dependency to indicate the sequencing information
- Data cleansing requirements from the legacy system
- Validations that would be necessary to verify that the conversion has been accomplished successfully
- Conversion sign-off process

Determine Data Conversion Strategies and Procedures

Working sessions will have to be scheduled during the Realization phase of the project with the functional team leads, Prime Integrator consultants and SCEIS Technical team. The purpose of this task is to put forth the data conversion big picture, the strategies to be discussed and have consensus within an implementation team. Much of the discussion is technical in nature with the ultimate goal of minimizing impact on involved stakeholders by maximizing the automation of data collection and conversions.

The data conversion for any object has one or more of the following tasks:

- Data Extraction from the legacy system
- Data Cleansing and Rationalizing
- Data Mapping
- Data Loading
- Data Verification

Once the tasks of the data conversion are understood, it is necessary to understand the different steps one needs to follow to ensure smooth completion of the conversion.

- Clear and well defined specification.
- A good design of the individual program is important to incorporate detailed and accurate error messages, as they are the only means of communication with the user.
- The analysis of the time sensitivity of the object. For some objects, it is not really necessary to wait until the cutover to actually load them, i.e, customers, vendors, materials, general ledger accounts. There are others like account balances, material stock, open sales orders, etc that have to be loaded at the very last moment to capture the most current and accurate situations.
- This analysis helps to organize data migrations in such a way that pressure can be removed and alleviated somewhat from the cutover stage.
- Extensive testing of the complete object transfer procedure is required. It is important to perform extensive tests, as the cutover period needs to progress error free.

- Full load for each object at least once. This is very critical as only a full load will verify whether all the cross-referencing and lookup data are available and correct. Additionally, this step will give an outline of the time and space requirements. The cutover plans for the implementation will be refined based on the results of the full load test.
- SAP provides data fields to record mapping of old object values to new object values. These fields allow conversion programs to be mapped to new objects and assist in reporting of historical data. It is important to maintain the association between the old and new number.

Conversion Check List

The purpose of this task is to create a detailed work list identifying tasks, dates, duration, responsible persons, dependencies, and required information. This work list determines the readiness for going live. The conversion check list will be developed as a task in the project plan. Listed are the key components of the conversion check lists:

- Create a conversion checklist for transport of all changes into production
- Configuration of the system application and business process are completed
- Instructions on how to process the conversion to completion
- Development objects are completed
- Legacy data is formatted into the required standards
- Security set for the user processing the conversion
- Processes are in place to record errors and status
- Reports are available to reconcile the conversion
- A system environment is available to test the conversion

Create Conversion Procedures

The purpose of this task is to set up procedures for transferring data from customer legacy systems to the SAP System. Most projects require manual conversion procedures and automatic programs. At the same time, keep in mind that configuration has a direct effect on the data conversion environment. Hence, one needs to strike a balance between starting early and determining the likely configuration so that the programs do not need extensive rework.

Create Conversion Detailed Definition

The purpose of this task is to get an overview of data transfer. The process will outline the source and target of each conversion. The data requirements will be determined by following the steps listed below

- Data objects to transfer from each legacy system
- Transfer method, manual or automatic
- Amount of data and quality in legacy systems
- Space and time required to load the object
- Dependency with other objects
- Time sensitivity of the object indicating whether the object has to be loaded during the cut-over phase or whether the object can be entered much in advance so as to ease the load during the critical cut-over
- Approval of detail data transfer design

Determine Data Transfer Method

Based on the conversion requirements defined in task, the data transfer method for each business object must be determined.

For each business object, the following choices for transferring data are available

- Using the SAP standard data transfer programs
- Manual data entry using online transactions
- Writing batch input programs for data transfer
- SAP provides data transfer documents that describes the tools

Determine Data Fields

To determine which data fields to convert, a review of the SAP ECC configuration is required. The SAP project team will assist the technical team to review the data fields that are required. The data fields can be reviewed using online help, data transfer maps, and dictionary structures. Required and optional fields can be determined through this review.

Determine File Structure

The conversion of data automatically with the SAP standard programs must be provided in a certain format. The format depends on the business object to be transferred. Every SAP ECC system standard data transfer program requires a certain file format and a certain sequence of data records. Information is available in the program documentation and in the *Step-by-Step Guide to SAP Initial Data Transfer-Guidebook*. This document is in the appendix of this document.

To determine the required data structure, use the transaction LSMW. For each data transfer program, a file can be generated. The flat file can be used as test data for consistency and completeness.

Analyze Data in Legacy System

Because there are many types of legacy systems, SAP cannot provide expertise in all these systems. The quality of the data in the legacy system is important. For example, if there are data fields that are not properly maintained, errors will occur in the data transfer programs. Also, consider the number of data records. This affects the runtime of the data transfer programs. The number of data records can be used to calculate the total runtime when making benchmarks with a subset of data records.

Create Conversion and Transfer Programs

The purpose of this task is to develop the programs required for automatic data conversion. Extract

the data from the legacy system and make the data available in the required structure. Creating and testing conversion programs can take a lot of time. Decide how to extract the data from the legacy system for each business object to transfer automatically. If there is no standard data transfer program, a batch input program to transfer the data to the SAP system will have to be developed**.**

Determine a programming language

A program language to prepare the data needs to be selected. If ABAP is used, the data structure must be defined in the Data Dictionary. If the following program languages are being used (C, COBOL, PL/1, or P_RPG,), the report RDDSRCG0 can be used to define the required ECC flat file structures.

Complete Manual Conversion Procedures

The purpose of this task is to set up reliable procedures for manual data conversion. Some legacy data must be manually converted to the SAP system.

- Create a list of data records for each business object to be manually entered in the SAP system.
- Use the SAP transactions for data input, and sort the data list in the same sequence as the data must be entered in the SAP system.
- Ensure that all required data records are in the list.
- Format the data records in the same format as the SAP transaction to prevent data input errors.

Test Conversion Programs

The purpose of this activity is to ensure the quality of the conversion programs to a QA environment. Test programs before final integration testing. Testing conversion programs and manual conversion procedures includes testing related business processes with imported data.

Error Correction

Testing conversion programs or manual entry lists is one of the most important steps of the initial data transfer phase. Testing reduces the number of errors during final data conversion.

For example, if an erroneous conversion routine for a price or quantity field shifts the decimal point, this can have serious effects in the production system.

Error correction after an erroneous conversion in the ECC System can be difficult and time consuming. Maintenance of missing data later can also be time consuming.

Runtime Evaluation

Runtime evaluation tests will allow the tracking of benchmarks. The benchmarks will be used to complete the final cutover plan and steps. Run the test with a subset of the data required later. Use a subset that is large enough to project the total runtime with all data.

Define Conversion Test Procedures

The purpose of this task is to set up procedures for testing conversion programs. User departments must be involved in testing to ensure data integrity, accuracy, and completeness. A separate client is recommended for testing the conversion programs.

- To perform test runs, select a number of data records in the legacy system. This allows for testing of all data values.
- The test plan must include a description of the test processes and of the data consistency checks in the SAP system.
- After data transfer, test all related business processes, and check master data.

- The test plan must ensure that data is correct and imported into the SAP system.

Create Test Data

The quality of the test depends on the choice of test data. The test data must be in a final format (data format, file structure). The test data must be like production data to test all data values and conversion programs. The size of the test data set must allow for a runtime estimation of the complete final data transfer, but must not consume too much testing time.

Data Transfer Test

Before testing, ensure that the quality assurance system is prepared for data transfer and has appropriate customizing settings. During the test, trace errors in conversion programs in SAP batch input and direct input programs. Data conversion programs must be corrected.

Check for Data Consistency in the SAP System

If no errors are detected during test runs, check for data correctness in the SAP system and for completeness of the data transfer. For all business objects, check if the related business processes run as designed in the Business Blueprint and if all required data is transferred. Check single data records for correctness (for example, decimal places and text strings).

Runtime

Measure the runtime of the test run and calculate the runtime for the complete data size. Also, please note the database requirement of the object.

Review Conversion Programs

In the case of conversion errors (if data records are wrong or data records are not imported into the SAP system), the conversion program must be fixed and the test run repeated.

If the calculated runtime for the whole data volume is too long, consider runtime optimization. Decide whether the conversion program, the batch input program, or the direct input program causes the long runtime.

Before runtime optimization, check for optimal parameterization of the SAP system.

Approve Conversion Test Results

The purpose of this task is to obtain approval from the persons responsible in the user departments for conversion test results. User departments must approve data conversion results to ensure the completeness and quality of converted data.

- The business process data owner must check the business processes and data consistency after the data transfer test.
- This check validates the data conversion programs for the final data transfer.
- The validations are done in two ways – random spot-checking and a full extensive check using reports.
- It may be necessary to involve external auditors to validate the data migration, usually in the FI, AM and HR modules where the implications of errors are enormous.

Migrate Programs to QA Environment

The purpose of this task is to transport the conversion programs to the QA system to facilitate final integration testing. The programs are released in the development system by the developer and the project lead. The programs then are migrated at the transport time window into the new system.

- Before exporting, check dependencies and links to other development objects.
- After exporting the programs, review the SAP system export logs.
- If required, import the conversion programs into the QA system (may already exist)
- Check the import in the QA system using the SAP system import log.
- Test the programs with reference to business processes in the QA system.
- Log the test and results to use for release to downstream systems.

APPENDIX
Conversion WRICEF Document

Solution Map	Conversion Object	Comments
Human Resources	HR Mini Master Info Type Action 0000, Org 0001, Pers 0002, Adds 0006, Comm 0105, Objects on Loan 0040 (also need an update program/interface until HR Go-Live)	File Layout for Info Types
Budget Execution	Fund (master data)	ABAP/LSMW
Budget Execution	Fund Centers (master data)	ABAP/LSMW
Budget Execution	Functional Areas (master data)	ABAP/LSMW
Budget Execution	Funded Programs (master data)	No legacy data
Budget Execution	Commitment Items (master data)	ABAP/LSMW
Budget Execution	Budget Upload for new FY	Excel cut and paste or Load into CO then transfer to FM
Budget Execution	Actual Expenditures Prior years (possibly Post Go-Live to facilitate comparison reporting - 2 yrs for CAFR) or use different tool to publish CAFR	Meet with Change Management to communicate data in system
Financial Accounting	GL Accounts	E-CATT, Upload LSMW
Financial Accounting	Outstanding Banking transactions	Open line items to clear against when using EBS
Financial Accounting	GL Balances	1st of FY-balance sheet accounts excluding subsidiary (ap/ar -- need line item)
Financial Accounting	Vendor Open Items	May create vendor balance as 1 open item if details unavailable or use cutoff possibly 2 weeks -- MM with open Pos
Financial Accounting	Check Lot	Check #
Financial Accounting	Cash Management Account Name Config	Liquidity forecast (possibly Post Go-Live)
Asset Management	Asset Master	LSMW, RAALTD01-Batch Input, RAALTD11-Direct Input, ALTD0001 (user exit for AM load)
Financial Accounting	Bank Accounts Configuration	Treasury functions, EBS, where you make payments (can be part of GL conversion
Financial Accounting	Bank Directory	FI01 transaction, for house banks and bank accounts it is FI12
Financial Accounting	Cost Center Group	Node, level, description (custom program) - master data needed - can then be used to create funds center groups
Financial Accounting	Cost Centers	Load master data - 1 standard data then assign lower nodes (2 update programs)

Financial Accounting	Cost Elements	Transaction OKB2 – transaction to identify which cost elements are created automatically by the SAP system. Transaction OKB3 – create batch input session to create cost elements. Transaction SM35 – Process batch input session. Secondary cost elements create individually.
Financial Accounting	Cost Center Hierarchy	Cost Centers assign to node of hierarchy, fix hierarchy then assign cc to lower nodes Create hierarchy 1st then assign cc
Financial Accounting	Cost Element Groups	Report to build groups
Financial Accounting	Internal Orders	New no conversion
Financial Accounting	Balances for Internal Orders	New no conversion
Financial Accounting	Activity Rates	New no conversion
Financial Accounting	AR Open Items	
Financial Accounting	Closed AR Items	YTD possibly to analyze rev trans
Grants Management	Sponsor (master data)	ABAP/LSMW (Excel Upload)
Grants Management	Sponsored Programs (master data)	ABAP/LSMW (Excel Upload)
Grants Management	Sponsored Class (master data)	ABAP/LSMW (Excel Upload)
Grants Management	Open Grant (master data)	ABAP/LSMW (Excel Upload)
Grants Management	Opening balances for grants	ABAP/LSMW
Grants Management	Life to date budget for grants	LSMW
Grants Management	Actual Expenditures/billing – Current Year- for open Grants	LSMW
Grants Management	Actual Expenditures/billing – Prior Years-For open grants	Which phase of project?
Grants Management	Grants Historical Data (Three years)	Which phase of project?
Program& Project Management	Open Capital Projects (master data)	Upload Excel
Program& Project Management	WBS Elements	New no conversion - Upload Excel
Program& Project Management	WBS Hierarchy	New no conversion - Upload Excel
Program& Project Management	Open Project Balances (transactional)	New no conversion - Upload Excel
Sales Order Processing	Customer Master	New no conversion - scrub data manually
Inventory Mgmt	Storage Locations	load their legacy locations as SAP storage locations we also want to auto load the associated address info for each of these locations
Inventory Mgmt	Inventory Load	
Materials Management	PO	
Materials Management	Contracts	
Purchasing & SRM	Vendor Master	
Purchasing & SRM	Material Master	

Design Specification Worksheet

Conversion Detailed Definition Template

Date	***Date that the specification is started***
Prepared by (Functional person)	**Functional person who provides the information for the document**
Business Owner	**Functional person responsible for the approval of the Conversion**
Description	**Unique description for the Conversion**
Prepared by (Technical person)	*Technical person who provides information for the document*

Technical Name	***Name assigned by the technical group***
Description	**Unique description for the conversion**

Description of Business Process Conversion will Support
The over-all business process should be described here in enough detail so that the technical team can make decisions about options to help solve the business problem.

Program Requirements
This will give any logic requirements and flow that the outward or inward bound Conversion must perform. The requirement can be stated in logic or business terms.

Source Data For Conversion
The source system and tables (if available) are defined here. If directories, IP addresses or other information are needed, it should be contained here. If the extraction program is not known for SAP source data, then the transaction where most of the data can be seen should be specified.

Document Name of Mapping of Source to SAP
For every Conversion, there will be a mapping document that will specify the correlation between the source fields and the target fields. This document will need to specify any constant fill fields that will be needed on the target side. The mapping document must specify any look-up fields or calculation fields that are needed and the rules for each of them.

Frequency of Transfer
This is the business requirement of how often the Conversion must be run to support the conversion processing. Additionally if there are time constraints on how fast the Conversion must perform, they should be entered here.

Estimated Volume
Estimate the volume of data for every conversion. If the volume load differs at differing times, give the high/low estimate and the time pattern if available.

Requirements for Failure Notification
This should include a list of possible failures that the software must handle. This could be failure on the extraction, translation, transmission, or load programs. Each scenario should be discussed between the functional and technical person and a plan formulated.

Requirements for Restart Option
If a restart is specified in a failure, how must that restart be performed? Can all the data be reloaded or must the file be cleaned or the data deleted and a new transmission started?

Assumptions/Notes
All assumptions being made by either the functional or the technical person should be stated here. This will allow the functional and the technical teams to provide risk analysis on proposed changes to either the SAP configuration or custom software.

Issues #	**Description**	**Resolution**
List all open issues	*List all issues here that will be discussed in the first design meeting between functional and technical teams.*	*All issues resolved in the initial meeting should be removed from this list. After that, put in the resolution date and enter the resolution description as part of the above specifications.*

Last Change Date	*Date of Last Change made to the document*
Last Changed By	*Name of person changing the document*

Approvals

Business Owner	*Business owner's signature for acceptance*	*Date*
SAP Tech Lead	*SAP Tech Lead's signature for acceptance*	**Date**
Customer Tech Lead	*Customer Tech Lead's signature for acceptance*	**Date**

Reference:

Data Transfer Made Easy Guidebook 40B-45x Eng.zip - Step-by-Step Guide to SAP Initial Data Transfer

DevGuide-lsmw.pdf - SAP Best Practices Development Guide (includes LSMW – Legacy System Migration Workbench)

LSMW16_PRESENTATION_E[1].ppt – Accelerating Data Migration: LSMW Migration Workbench

LSMW 4.0.0 documentation.DOC – Legacy System Migration Workbench